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Critical Test Report

SHARP

Digital IMAGER AR-M700N

In March 2004, Sharp introduced a new digital copier family, the AR-M550, M620 and AR-M700 that it rates at 55, 62 and 70-ppm respectively. These units feature dual-scanning (scanning both sides of a two-sided document in a single pass) and tandem printing capability (users can link two digital copier/printers together, effectively doubling print speed). Industry Analysts recently tested the AR-M700N Digital IMAGER.

The AR-M700N configuration includes standard network printing, and optional network scanning (Sharp's *ImageSEND*). With *ImageSEND*, users can simultaneously scan and send documents to multiple groups, e-mail, file server, Internet fax and fax destinations from the touch-screen control panel in just a few easy steps. The AR-M700 also features state-of-the art printing features such as secure printing, hold printing and sample printing, as well as an upgrade to PostScript printing. As with all "N" models in this series, the unit features standard tandem copying/printing capability, allowing the customer to link the AR-M700N with a AR-M550N, the AR-M620N or AR-M700N, increasing copy/print speeds by as much as 100%.

A Note on Our Testing

This test report produced by Industry Analysts, Inc. is based on tests performed using standardized test methods and practices. These test methods and practices include the conditioning and testing of various subsystems, repeatability, data collection and reporting, etc.

At Industry Analysts' Fairfield, New Jersey, test laboratory, we use commonly recognized lab practices such as:

- All devices are installed on dedicated power lines.
- All devices are tested using stabilized network conditions.
- All anomalies and/or service required is recorded and reported.
- All misfeed data, including the current meter count, misfeed location, substrate, modes and paper drawer in use is recorded.
- Temperature and humidity are monitored during the tests and adjusted if necessary.
- We test using all paper sources, duplex modes and applicable paper types.
- When we test at a vendor-authorized facility, we test using the same portable client/server test apparatus that we use in our testing laboratory

Vendor Background

Sharp Electronics Corporation
Sharp Plaza
Mahwah, New Jersey 07430-2135
www.sharpusa.com

Sharp Digital IMAGER AR-M700N
Critical Specs-At-A-Glance

Rec. MPV	300,000 pages
Print Speed	70 ppm
Max. Paper Size	11"x17"
Max. Print Res.	600 dpi
Std. Paper Cap	3,100 sheets
Max. Paper Cap	6,600 sheets
Paper Wts.	16 lb. bond.- 110 lb. index
Color Output/Scanning	No
Std. RAM	128 MB
Hard Drive	40 GB
Network Scanning	Standard.

Tested Configuration
(List Pricing)

AR-M700N	$27,650
Network Scanner Expansion Kit	$1,195
PostScript 3	$895
Total	$29,740

Other Available Options

3,500-sheet LCT	$1,500
Super Group 3 Fax	$1,195
Saddle-Stitch Finisher	$4,350
Stapler Finisher	$2,795
Post-Process Sheet Inserter	$2,095
Barcode Font Kit	$59

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Image Quality

Image Quality: The quality of the images produced by the Sharp AR-M700N as evaluated by Industry Analysts, Inc. All images were produced under controlled conditions using automatic or default settings.

Sharp AR-M700N		
Copied Image Quality	Black Output	Color Output
Contrast of Prints and Copies	◑	N/A
Reproduce Fine Lines and Detail	◑	N/A
Reproduce Photos	●	N/A
Reproduce Light Photos	◑	N/A
Reproduce Dark Photos	◑	N/A
Comparative Ranking	◑	N/A

Sharp AR-M700N		
Printed Image Quality	Black Output	Color Output
Print Fine Lines	◑	N/A
Print Photos	◑	N/A
Print Negative and Positive Detail	◑	N/A
Print Negative and Positive Lines	●	N/A
Comparative Ranking	◑	N/A

Key: ● = Above Average ◑ = Average ○ = Below Average

The Sharp AR-M700N features dual-head-scanning (scanning both sides of a two-sided document in a single pass) , this maximizes productivity an minimizes wear and tear of the originals. This makes the AR-M700N an ideal platform for the scanning of two-sided or fragile originals.

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"Snapshot" of Copier Productivity

In the chart below, the 70-ppm Sharp AR-M700N's copier productivity is compared to that of two devices tested by IATSD, one rated at 72 ppm, the other at 75 ppm. Copy jobs were timed from the press of the "Start" button until the complete exit of the copy using a 10-page document, the document feeder and default automatic settings.

	1-Sided Copies (1:1)					2-Sided Copies (1:2)				
	1st Copy Out Time (FCOT)	1 Set (ppm)	3 Sets (ppm)	5 Sets (ppm)	10 Sets (ppm)	1st Copy Out Time (FCOT)	1 Set (ppm)	3 Sets (ppm)	5 Sets (ppm)	10 Sets (ppm)
Tested 72 ppm device	5.23 sec.	46.8	61.1	65.1	68.8	9.68 sec.	29.2	50.8	55.8	63.5
Sharp AR-M700N (70 ppm)	9.67 sec.	34.4	53.4	59.1	64.3	13.21 sec.	30.2	48.3	53.1	58.9
Tested 75 ppm device	7.19 sec.	41.6	60.2	64.8	68.7	9.62 sec.	31.1	55.2	61.5	67.2

"Snapshots" of Network Printer Productivity

IATSD determined printer productivity using its controlled Microsoft Windows 2000 local area network with a Microsoft Windows 2000 Professional client. Since printer productivity involves many minor variables (such as network hardware/software throughput efficiency, network-queue polling times, network-server processing power and computer-workstation processing power), the printer-productivity test results below may be difficult to replicate. Productivity tests were performed using IATSD's selection of standard documents. Timings were performed using default printer settings, and began from the "click of the mouse" until the complete exit of the print.

In the charts below, the 72-ppm Sharp AR-M700N's printer productivity is compared to that of two devices tested by IATSD, one rated at 72 ppm, the other rated at 75 ppm.

PCL 6 when printing a 10-page Microsoft Word text document (68 Kb)

PCL 6	1-Sided Printing					2-Sided Printing				
	1st Page Out Time (FPOT)	1 Set (ppm)	3 Sets (ppm)	5 Sets (ppm)	10 Sets (ppm)	1st Page Out Time (FPOT)	1 Set (ppm)	3 Sets (ppm)	5 Sets (ppm)	10 Sets (ppm)
Tested 72 ppm device	6.68 sec.	41.1	58.3	63.7	68.4	9.66 sec.	31.8	50.6	57.4	63.8
Sharp AR-M700N (70 ppm)	9.80 sec.	33.7	48.4	53.0	57.4	13.83 sec.	30.9	46.0	53.6	56.9
Tested 75 ppm device	7.18 sec.	35.8	40.5	51.1	63.6	10.59 sec.	37.8	56.7	64.0	70.8

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PostScript Level 3 when printing10-page Microsoft Word text document (68 Kb)

PostScript Level 3	1-Sided Printing					2-Sided Printing				
	1st Page Out Time (FPOT)	1 Set (ppm)	3 Sets (ppm)	5 Sets (ppm)	10 Sets (ppm)	1st Page Out Time (FPOT)	1 Set (ppm)	3 Sets (ppm)	5 Sets (ppm)	10 Sets (ppm)
Tested 72 ppm device	6.52 sec.	41.6	57.7	62.4	66.6	9.55 sec.	32.9	53.9	61.9	63.1
Sharp AR-M700N (70 ppm)	11.25 sec.	31.2	48.6	55.9	62.0	13.37 sec.	28.2	43.3	52.3	58.5
Tested 75 ppm device	7.96 sec.	33.7	58.1	63.8	68.9	10.68 sec.	35.5	54.7	63.8	72.8

PCL 6 when printing a 10-page Microsoft PowerPoint color document with text and graphics (502 Kb)

PCL6	Black (Grayscale)	
	1st Page Out Time (FPOT)	1 Set (ppm)
Tested 72 ppm device	7.37 seconds	39.0
Sharp AR-M700N (70 ppm)	9.56 seconds	16.5
Tested 75 ppm device	6.76 seconds	42.9

PostScript Level 3 when printing a 10-page Adobe Acrobat color document consisting of text and graphics

PostScript Level 3	Black	
	1st Page Out Time (FPOT)	1 Set (ppm)
Tested 72 ppm device	8.72 seconds	32.6
Sharp AR-M700N (70 ppm)	21.51 seconds	17.3
Tested 75 ppm device	8.04 seconds	39.7

PostScript Level 3 when printing a 1-page continuous tone (color) TIFF file (20 Mb)

PostScript Level 3	Black		
	1 Page	3 Pages	5 Pages
Tested 72 ppm device	1.6	4.0	5.6
Sharp AR-M700N (70 ppm)	0.7	3.2	5.1
Tested 75 ppm device	3.8	10.3	15.9

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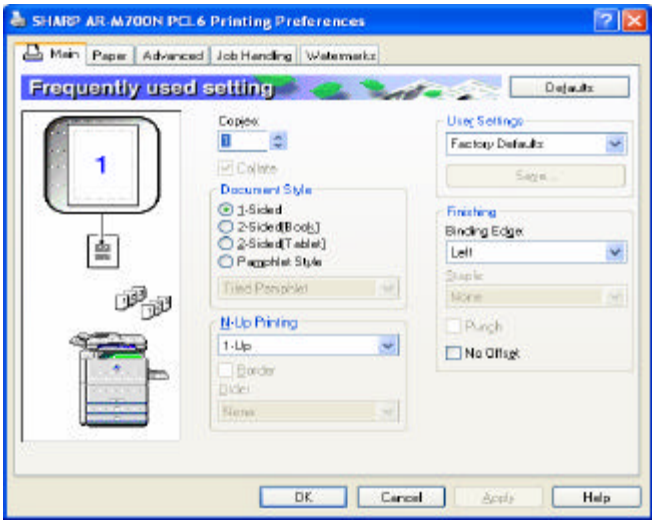
Client Software

Software Component	Description
Print Drivers	The Sharp AR-M700N is equipped with PCL 5e and PCL 6 print drivers; a PostScript Level 3 print driver is optional.
Printer Status Monitor	Allows users to monitor the printer, including its configuration and status, as well as print jobs, from their computers. It resides as an icon in the Microsoft Windows' system tray on the computer desktop. The icon appears green when the printer is ready to print, but turns red when there is a problem
Printer Web Page	Web-based software that provides real-time status and device configuration information.

Print Drivers

The Sharp AR-M700N PCL and PostScript print drivers feature identical user interfaces; this is desirable as it minimizes user training and support. Also of note, is that users can automatically configure the device using the configuration tab via the Microsoft Windows' *Printers Folder*.



Print Driver Features	
Auto Hardware Configuration	✔
Windows NT Point and Print Compatible	✖
Automatic Software Deployment Routine	✖
Integrated Real-Time Printer Status	✖
Integrated Real-Time Paper level	✖
Integrated Real-Time Toner level(s)	✖
Integrated Real-Time Job Log	✖
Automatic Alerts	✔

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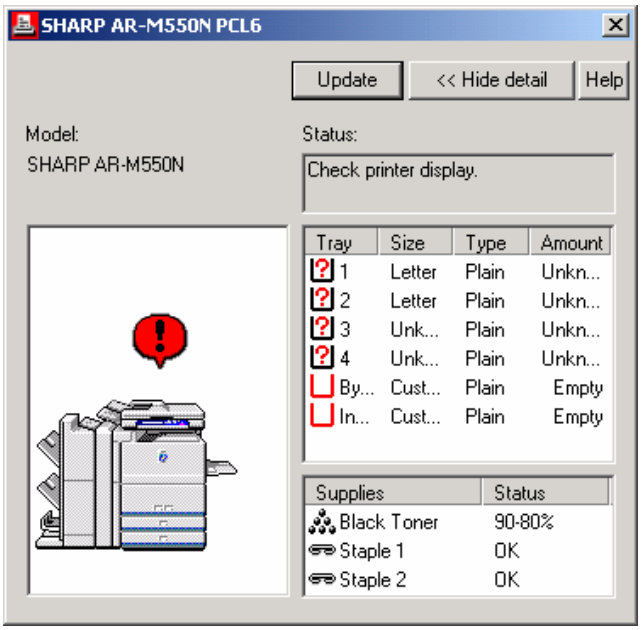
Client Printer Monitoring

Printer-Monitoring Features	
Integrated Real-Time Printer Status	✔
Integrated Real-Time Paper level	✖
Integrated Real-Time Toner level(s)	✖
Integrated Real-Time Job Log	✖
Programmable Alerts	✖
Monitor Multiple Printers	✖
Monitor Third-Party Printers	✖



Administrative Software

Software Component:	Description
NIC Manager	Enables the administrator to install the Sharp Digital IMAGER AR-M700N on IP/IPX networks via a series of easy-to-follow prompts. Sharp provides a unified installation routine, as well as customizable installation routines.
Printer Administration Utility	Allows the network administrator to configure and monitor all MIB (Management Information Base)-compliant printers on the network, using SNMP standards, and indicates current device status and configuration.
Printer Web Page	Web-based software for managing and monitoring the device. Printer Web Page allows administrators to view printer status and setup information including paper types and level, toner and staple supply and a comprehensive meter count. Using Printer Web Page, administrators can change network settings and basic scanner settings.

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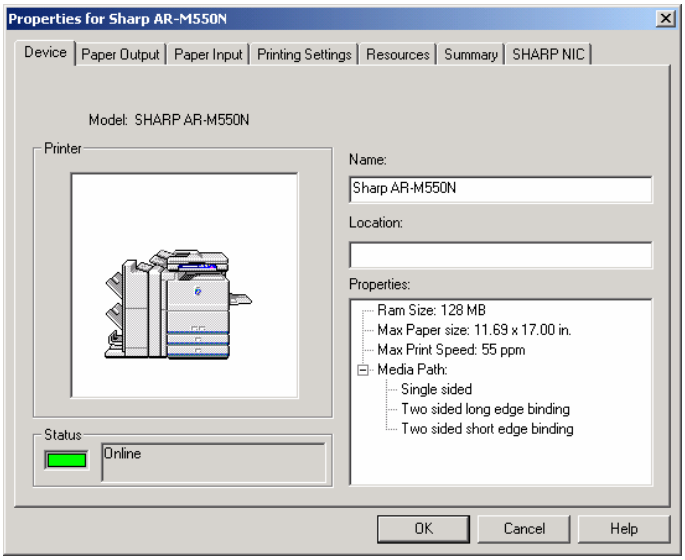

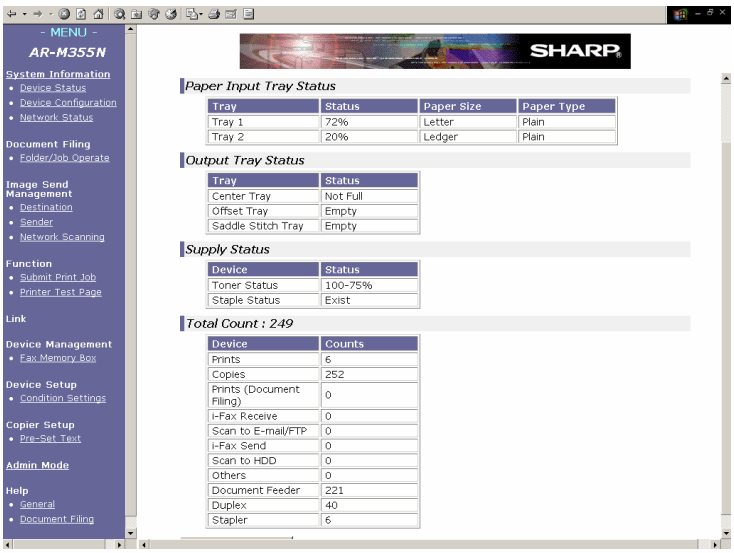

Administrative-Software Features			
Unified Installation of Administrative Tools	✔	Track Usage by Scans	✔
Web-Based Group Management Tool	✔	Track Usage by Duplex/Simplex	✔
Executable Group Management Tool	✔	Track Toner Usage	✔
Can Manage MIB-Compliant Devices	✔	Track Original Area Coverage	✘
Can Manage SNMP-Compliant Devices	✔	Track Original Area Coverage by Color	✘
HP JetAdmin Compatible	✘	Track Toner/Ink Usage per Job	✘
Configurable E-mail Alerts	✘	Export Tracking Data to Microsoft Excel	✘
Track Usage by Paper Sizes	✘	Export Tracking Data as Standard Delimited Data	✘
Track Usage by Paper Types	✘		

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Network Scanning

Software Component:	Description
ImageSEND	An optional Network Scanner Expansion Kit, enables Sharp's LDAP-compatible *ImageSEND* which allows users to simultaneously scan and send documents to multiple e-mail, desktop, file-server, Internet fax, and fax destinations from the touch-screen control panel.
Sharpdesk	The optional Network Scanner Expansion Kit, includes a 10-user license for *Sharpdesk* document-management software. Scanned documents appear in the *Sharpdesk* window as thumbnails allowing the user to browse, edit, search, compose, and forward both scanned and native electronic documents. Sharpdesk is compatible with any TWAIN-compliant scanner.

Network Scanning Features						
Send Destinations	Desktop	FTP	SMB	e-mail	Local fax	ifax
	✔	✔	✔	✔	✔	✔
LDAP/Dynamic Network Address Book	✖					
Import and Export Senders and Destinations	✖					
Manage Local Destinations from Printer Home Page	✔					
Manage Local Destinations from Control Panel	✔					
Create "on the fly" e-mail destinations	✔					

CONTROLS & MAINTENANCE

Control Panel

Main Touch Screen

Control Panel Considerations	Touch Screen Considerations
Commonly Used Features on Main Screen	✖
Low Reliance on Submenus	✖
"QWERTY Style" Virtual Keyboard	✔

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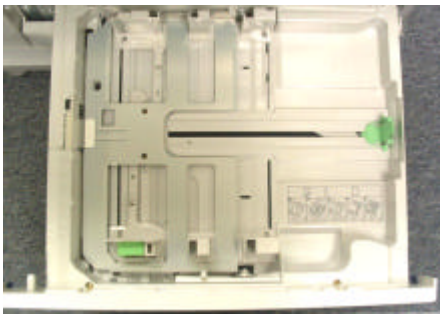
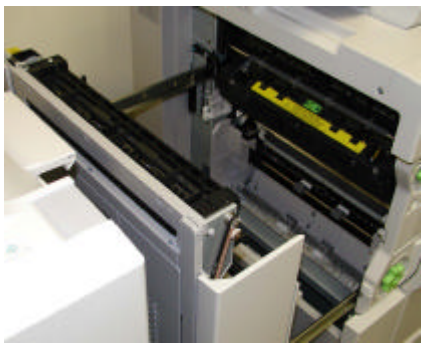


Paper Drawer

Adding Toner

Paper-Drawer Tray Considerations		Toner-System Considerations	
No Corner Separators in Paper Trays	✔	Bottle Toner	✖
No Spring-Loaded Ramps in Paper Trays	✔	Cartridge Toner	✔
Captured Rear Guide in Paper Trays	✔	Load While Running	✖
Paper Size Changes Automatically Updated	✖		



Transport Fuser and Duplex Inverter Misfeed Access

Paper-Transport Misfeed Access

Misfeed-Access Considerations	
Number of Engine Access Panels	2
"Works in a Drawer" Misfeed Access	✖

Space-Requirement Considerations	
Finisher Remains Stationary for Engine Misfeed Access	✖
LCT Remains Stationary for Engine Misfeed Access	✖
No Front Space Required for Misfeed Access	✔
No Left Side Space Required for Misfeed Access	✖
No Right Side Space Required for Misfeed Access	✖
No Finisher Bridge Misfeed Access	✔

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Competitive Advantages

- With its *Duplex Single Pass Feeder*, the Sharp AR-M700N simultaneously scans both sides of a duplex original for better productivity.
- The AR-M700N may be equipped with a wide range of document-finishing options including a document finisher, saddle-stitch booklet-maker, and post-process sheet inserter.
- With Sharp's standard LDAP-compatible ImageSEND network scanning, users can simultaneously scan and send documents to multiple e-mail, file server, Internet fax and fax destinations from the touch-screen control panel in just a few easy steps. In contrast, with most other systems' network-scanning, users can only scan-and-send to one type of address at a time (i.e., they must scan the originals, select one type of destination, such as e-mail addresses). Then, when that operation is completed, users must rescan the originals, and select another type of destination, such Internet fax destinations.
- Sharp provides extensive device and document security, including a private printing feature; File Security option for securing sent documents; a Data Security Kit for encrypting data and overwriting the hard drive; and a Secure (Ethernet) Network Interface Card (NIC) for Internet Protocol (IP) filtering, so that administrators can restrict user access to the MFP and its printer Web page.
- Administrators and users will find software for managing and monitoring network printers is easy to use.
- As with all "N" models in this series, the unit features standard tandem copying/printing capability, as the customer can link the AR-M700N with another AR-M700N, the AR-M550N or AR-M620N, increasing copy/print speeds by as much as 100%.
- Touch screen has good contrast and clarity.
- Customizable installation routines for the print driver.
- Ability to produce saddle-stitched documents with thick covers or color inserts.

Competitive Disadvantages

- The server must be rebooted after the print and fax drivers are installed in a client/server environment.
- The PCL print driver is not compatible with Microsoft Window's "Point and Print" feature and unlike the Post Script Level 3 driver, will not operate in client/server mode.
- The PostScript Level 3 driver is not compatible with the Microsoft Windows' "Add Printer" utility; instead, the wizard must run from the Sharp installation CD.
- The PCL print driver's "Print Preferences" for the paper tray always defaults to the "Center Tray."
- No automatic deployment routines for print drivers and client software.
- Management of network scanning destination and senders can be tedious, especially in multiple unit installations.

Optimal Use for this Product

Most Suitable For:	Less Suitable For:
• Mid-volume enterprises and workgroups.	• SOHO and low-volume use.
• Mid-volume network-printing, copying, finishing and network scanning.	• High-volume and production applications.
• Networks with small-to-moderate number of clients.	· Networks with many clients (because of lack of central management and automatic software-deployment features).

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The Bottom Line

In testing, IATSD found that overall, most enterprises will find the Sharp AR-M700N a very productive performer with several natural advantages. In testing, the unit displayed only some minor disadvantages, and these are all software related involving multiple printer management, and installing and deploying software.

The unit's advantages include very competitive tested print and copy speeds, standard network scanning with LDAP compatibility, simultaneous sending to multiple types of destinations, network authentication for secure scan-to-e-mail, and excellent productivity in duplex mode with Sharp's Duplex Single Pass Feeder.

The Sharp AR-M700N produced prints and copies with good fine detail. Its network printer-management software is easy to use for both administrators and clients. The AR-M700N may also be equipped with a variety of options including Super Group 3 walkup fax, document finishers (including a saddle-stitch booklet-maker), post-process sheet inserter, and an option for printing barcodes. Most notably, the Sharp AR-M700N can be simultaneously equipped with both a finisher and mailbox, a combination that is not available from most other vendors. This is especially useful in enterprises where printed document security is a consideration.

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Industry Analysts, Inc. (IA, Inc.) is a market research and product testing firm specializing in the office automation industry. Founded in 1974, IA, Inc. provides "real-world" third party testing and evaluations, market research and focus groups from our offices in Fairfield, New Jersey, and Rochester, New York.

IA, Inc. is a veteran member of the Business Technology Association. Our staff regularly attends industry trade shows and analyst meetings. Technical Director Terry Wirth has served on ASTM (American Society of Testing of Materials) standards committee F.05 for Business Imaging Products since 1990. He served as president of the committee from 1994-1999 and currently heads two subcommittees.

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